

Work Order ID 127272-2

Wednesday, December 17, 2014 7:45:40 AM

127272

PRELIMINARY ISSUE Page 1

Item ID: D6021-125 Accept *N9000040100* Setup Start *NS1*
 Revision ID: Prelim Stop *NS2*
 Item Name: Crosstube Material - 17-4Ph SS
 Start Date: 4/30/2015 Start Qty: 50.00 *50*
 Required Date: 4/30/2015 Req'd Qty: 50.00 *50*
 Reference: *Split - 2 Split 3-3.*
 Cust Item ID: *20X 2X.*
 Customer:

Approvals: Process Plan: *CA* Date: *12/12/17* Tooling: Date: Run Start *NR1*
 QC: Date: SPC (Y/N): Date: Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr	
	<i>Rev A</i>	<i>DAS 9 15-06-02</i>

100 PURCHASING 0.00 *CK 12/12/17 50*

100

Purchasing

Purchasing

Memo

0.00

Issue P/O: *24911* Description: 17-4PH H1100 seamless Stainless steel Tube, per ASTM A564 2.378"OD X2.00" ID X125" Long)
 Min. Ultimate Tensile Strength=140ksi
 Min. Yield Tensile Strength = 115ksi
 Tolerance on all dimensions are as per Dwg D6021 Rev. PA1 and ASTM A519
 Possible Supplier: Siderval
 Material certification required

110 Receive & Inspect for Damage & Mat'l Certs 0.00 *2X 2015-04-14.*

110

Packaging

Packaging

Memo

0.00

Ensure material certification is attached

Work Order ID 127272

127272

PRELIMINARY ISSUE

Page 2

Wednesday, December 17, 2014 7:45:40 AM

Item ID: D6021-125 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Prelim Stop ***NS2***
 Item Name: Crosstube Material - 17-4Ph SS
 Start Date: 4/30/2015 Start Qty: 50.00 ***50*** Cust Item ID:
 Required Date: 4/30/2015 Req'd Qty: 50.00 ***50*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo <i>cs per low A</i>	0.00							DAS 9 9-89
Quality Control									
130	Identify as per dwg & Stock Location: _____	0.00							
130									
Packaging	Memo	0.00							
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.00							
Quality Control									

CL 15/04/14 2
pull on W/O: 129473
2
129474
ML5 JUN 03 2015
CL 15/04/14

POSITIVE RECALL

EFFECTIVE _____ AUTH _____

RELEASED _____ DATE _____

Wednesday, December 17, 2014 7:45:40 AM

Page 1

127272

D6021-125

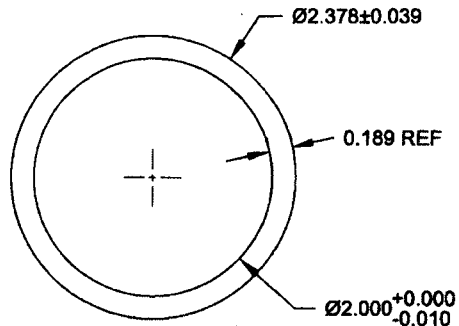
Required Date: 4/30/2015

Required Qty: 50.00

Comments: new issue - prelim LL 12.05.04

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6021-125P		Purchased	No				Each	0.0000		50	2x		
D6021-125P										**	2x 50 05-04-14		
Crosstube Material - 17-4PH													

SPECIFICATION CONTROL DRAWING



NOTES

1) D6021-XXX CROSSTUBE

LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 125" LONG TUBE: D6021-125

2) MATERIAL: 17-4PH SEAMLESS STAINLESS STEEL TUBE PER ASTM A584
Ø2.378 O.D. x Ø2.000 I.D.

HEAT TREAT TO H1025:

MIN. ULTIMATE TENSILE STRENGTH = 155 ksi

MIN. YIELD TENSILE STRENGTH = 145 ksi

3) TOLERANCES ARE AS FOLLOWS:

ECCENTRICITY: 10% (+/-0.018" WALL)

LENGTH: XXX +0.188"/-0.000"

STRAIGHTNESS: 0.012" DEVIATION / 12" LENGTH

4) ALL DIMENSIONS ARE IN INCHES

5) TUBE MUST BE PICKLED OR ELECTROPOLISHED TO BE SMOOTH AND FREE FROM SCALE.
6) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

CX1012/17

W10.127272

PRELIMINARY ISSUE

9/14/03

PA5	NEW ISSUE	CP	14.06.03
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
DE APPR.			
DATE	14.06.03		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D6021	REV. PA5 SHEET 1 OF 1
TITLE CROSSTUBE MATERIAL	SCALE NTS
COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS REVISED ON THE COMPANY'S DECISION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

PACKING LIST



39 Enterprise Drive # 2 Windham, ME 04062
Phone 207.892.8899 Fax 207.892.8863

Packlist ID: 01302
Date: 4/2/2015
Page: 1

Sold To Address

DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY K6A 1K7
CANADA

Ship To Address

DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY K6A 1K7
CANADA

			CUSTOMER PO		PAYMENT TERMS		F.O.B.	
			24911		Net 30		WINDHAM	
SALES REP ID			SHIPPING METHOD		SHIP DATE		OUR ORDER NUMBER	
EVAN			CUSTOMER TRUCK		4/2/2015		DAR140195	
QUANTITY								
ORD	SHF	BCK	PART ID		DESCRIPTION			

56.00 2.00 16.00 D6021-125P

CROSSTUBE
Drawing:
Unit of Measure: EA
Legacy Part No.:

Rev No.:

2 PIECES OF TUBE HOLLOW INTERNATIONAL SUPPLIED 17-4 PH MATERIAL.

THE INITIAL MACHINING OF THE OD AND ID WERE DONE UNDER THI WO#:
141016/03 & DART PO#: PO24911 L/I 2.

THESE TWO PIECES WERE USED TO FULFILL L/I 4 & 5 OF DART PO#: PO27398.

S/N(S): T8D WAS CONVERTED TO PART# D350-748-143TRNP

S/N(S): B8F2 WAS CONVERTED TO PART# D350-748-243TRNP

THANK YOU FOR THIS ORDER.

CLIS/04/114

RECEIVED BY: _____



STATEMENT OF CONFORMANCE

Dart Aerospace Ltd.
1270 Aberdeen
Hawkesbury, ON K6A 1K7

Part #: D6021-125P ✓
Material: 17-4 PH
Report #: 5083150
Heat #: 053468
Drawing #: D6021 Rev. PA5
P.O #: PO24911 D/I 2
THI WO#: 141016/03
Qty: 2

SN: T8D, B8F2

The above-mentioned parts have been inspected and conform to customer contract, purchase order, drawing, and other required specifications. All exceptions are noted below. Inspection data and all certifications are kept on file and available for review upon customer request.

Comments: This is a partial shipment under this P.O.

Inspected / Certified By: Tom Bowker

Tom Bowker, Quality Dept. March 25, 2015

**VALBRUNA**

SLATER STAINLESS, INC.

2400 TAYLOR STREET WEST - PO BOX 630
FORT WAYNE IN 46802 USA
PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report**Report Number: **5083150**

Certified on Dec 04, 2014 Page 1 of 2

Order I.D. 1402065 001		Order Date 7/31/14		Commodity Code	
Dim 1 2.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 053468	Customer I.D. 001417	Customer Purchase Order P011200
Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 17-4
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 423604	Weight	

Ship To

Attention: Penn Stainless Prod
Tube Hollows International
39 Enterprise Dr.
Suite 2
Windham, ME 04062

Sold To

VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802

Lifts: 0034 0035

Condition H-1025

ASTMA 564-13

MS-17-4H1025

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.035	.64	.027	.025	.43	15.66	4.37	.25	3.26	.04	.26	.010	.270

ROCKWELL HARDNESS ASTM E18-14

HRC

35.0

TENSILE PROPERTIES ASTM E8-13a

TS (PSI)	.2%YS (PSI)	%EL(2")	%RA
161100	150100	21.0	59.4

CHARPY V NOTCH E23-12c

TEMP	FT/LB	FT/LB	FT/LB	LAT EX	LAT EX	LAT EX	AVG FT LB	AVG LAT EX
70	86	78	79	32	40	33	81	35

TEST(F)

70

MAGNETIC PARTICLE TEST AMS2303

FREQ SEV

AVG .00 .00

PRODUCTION HEAT TREATMENT

SOL-ANN(F)	SOL-ANN(HR)	QUENCH	AGE(F)	AGE(HR)	QUENCH
1900	6.00	Air	1025	4	Air

MACRO ASTM E340-13/E381-01

MACRO

OK

PERCENT FERRITE (AMS 2315)

% FERRITE Etchant Magnification X

AVG .3 Marbles 100

ULTRASONIC TEST (ASTM A388)

OK

Free of mercury and low melting alloy contamination.

No welding or weld repair done.

Tensile specimen size .505".

Reduction ratio exceeds 5 To 1.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes. Including Federal law Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

email: DHackett@valbruna.us

Dennis Hackett

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SLATER STAINLESS, INC.

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PHONE 260.434.2800 - FAX 260.434.2801**Product Certification Report****Report Number: 5083150****Certified on Dec 04, 2014 Page 2 of 2**

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Product Shape Rounds			Product Surface HR & Rough Turned		Customer Grade 17-4	
Length (Inches) 132.000 Min. 156.000 Max.			Bill of Lading # 423604	Weight		

**Ship
To****Attention: Penn Stainless Prod
Tube Hollows International
39 Enterprise Dr.
Suite 2
Windham, ME 04062****Sold
To****VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802**

Specimen tested at longitudinal, mid-radius, room temperature.

Ultrasonic tested to ASTM A388 - Satisfactory.

Melted in Italy per DFARS clause 225.872-1.

Chemical testing to one or more of the listed ASTM methods:

E415-14, E1019-11, E1086-14.

Location of tensile fracture: inside middle of gage length.

No mercury or low melting alloy contamination. No weld repair.

Material melted and manufactured in the United States.

Material conforms to listed specifications and is DFARS compliant.

Quality system is compliant with ISO 9001:2008. Produced in accordance with EN 10204 3.1.

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email: DHackett@valbruna.us

Dennis Hackett



STATEMENT OF CONFORMANCE

Dart Aerospace Ltd.
1270 Aberdeen
Hawkesbury, ON K6A 1K7

Part #: D6021-125P ✓
Material: 17-4 PH
Report #: 5083150
Heat #: 053468
Drawing #: D6021 Rev. PA5
P.O #: PO24911 L/I 2
THI WO#: 141016/03
Qty: 2

SN: T8D, B8F2

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email: DHackett@valbruna.us

Dennis Hackett

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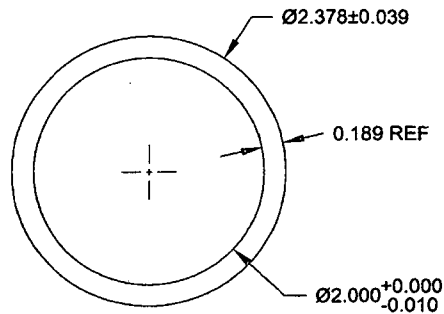
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Manager Laboratory Services

email: DHackett@valbruna.us

Dennis Hackett

SPECIFICATION CONTROL DRAWING



NOTES

1) D6021-XXX CROSSTUBE

LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 125" LONG TUBE: D6021-125

2) MATERIAL: 17-4PH SEAMLESS STAINLESS STEEL TUBE PER ASTM A564
Ø2.378 O.D. x Ø2.000 I.D.

HEAT TREAT TO H1025 (HRc 34-42):
MIN. ULTIMATE TENSILE STRENGTH = 155 ksi
MIN. YIELD TENSILE STRENGTH = 145 ksi

3) TOLERANCES ARE AS FOLLOWS:
ECCENTRICITY: 10% (+/-0.018" WALL)
LENGTH: XXX +0.500"/-0.000"
STRAIGHTNESS: 0.012" DEVIATION / 12" LENGTH

4) ALL DIMENSIONS ARE IN INCHES

5) TUBE MUST BE PICKLED OR ELECTROPOLISHED TO BE SMOOTH AND FREE FROM SCALE.

6) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

RELEASE

2015 MAR 18

4P ECH 15-547

A	NEW ISSUE	CP	15.01.20
REV.	DESCRIPTION	BY	DATE
DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D6021	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE MATERIAL	NTS
DATE	15.01.20	COPYRIGHT © 2015 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: 1002-125
 DATE: 15-06-02

PO / BATCH NO.: P024911/127212

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 2
 QUANTITY INSPECTED: 2
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .139 of
 THICKNESS RECEIVED: .126
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	(Y) N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	(Y) N	
CORRECT MATERIAL	(Y) N	
CORRECT THICKNESS	(Y) N	
PHOTO REQUIRED	Y (N)	
CORRECT MATERIAL	(Y) N	
CORRECT REF # TO LINK CERT	(Y) N	HT# 053463
CORRECT MATERIAL IDENTIFICATION	(Y) N	
CORRECT M# ON THE MATERIAL	(Y) N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y (N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D	
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>DAS</u> <u>9</u>	SIGNED OFF BY: _____		
DATE: <u>15-06-02</u> 9-89	DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in